

# THE RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND PROFITABILITY OF LISTED MANUFACTURING COMPANIES IN GHANA

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## ABSTRACT

*This study examines the effect of working capital management on the profitability of companies listed on the Ghana Stock Exchange. Secondary data from the Ghana Stock Exchange on manufacturing companies within the Accra metropolis was used to examine whether working capital management influence the profitability of manufacturing companies in the country. The study found out that, the major component of working capital management such as inventory days, account payable and cash conversion cycle have influence on the profitability of manufacturing companies. The study recommended that, manufacturing companies should adopt efficient and effective ways of efficiently managing these components of working capital management.*

**KEY WORDS:** Working capital management, profitability, net operating profit

## 1.1 INTRODUCTION

Working Capital Management has become very important in financial management because of its effects on the firm's profitability, risk and consequently its value. There are several important reasons why the management of working capital is important to both small and large organisations. (Smith, 1980).

A well designed and implemented working capital management policy is expected to contribute positively to the creation of a firm's value. (Padachi, 2010). Current assets of many companies, accounts for over half the total assets and are even higher in the companies in the distribution sector. (Horne and Wachowicz, 2009). However, a company is required to maintain a balance between liquidity and profitability while conducting it day to day operation. This required that a business must be run both efficiently and profitably. In the process, Assets-liability miss-match may occur, which may increase the firm's profitability in the short - run but at a risk of its insolvency. On the other hand, too much focus on liquidity will be at the expense of profitability of the firm.

Moreover, if management of a firm does not constantly monitor and manage a business's liquidity-that is, its amount of working capital, the business can find itself in a difficult situation with its creditors.( Padachi 2006). As a result, most successful businesses keep the working capital ratio as low as possible and keep cash circulating, to maximize profit.

Efficiency in working capital management is so vital for especially production firms whose assets are mostly composed of current assets as it directly affects liquidity and profitability of any firm.( Horne and Wachowitz (1998) and Raheman and Nasr (2007). Bankruptcy may also be likely for firms that put inaccurate working capital management procedures into practice even though their profitability is constantly positive.( Kargar and Bluemental 1994). They further said that, excessive levels of Working Capital can easily results in a substandard return on assets; inconsiderable amount of it may incur shortages and difficulties in maintaining day to day operations.

Conversely, they confirm to the fact that, firms that have low liquidity of working capital, facing high risk return, result to high profitability. The problem here is the management of working capital and how firms must balance its risk and return in order not to lock up its profits in the future.

Working capital management is of a particular importance to either small as well as large businesses. (Chittenden, Poutziouris and Michaels, (1998); Sacurato, 1994) They continued to say that, firms tend to rely more heavily on owner financing, trade credits and short term bank loans to fund their needed investment in cash, accounts receivable, and inventory. As a result of this, the researchers decided to embark on a study to look at how these firms manage their working capital and its effects on their profitability.

Studies in the US and UK have shown that weak financial management particularly poor working capital management and inadequate long term financing are two major primary causes of failure among business. Berryman, (1983); Dunn and Cheatham, (1993). Also, several research works have identified factors affecting the profitability of organization which are determined by inventory management, cost and price together, but no significant work has been done on the effects of working capital management on the profitability of medium and large manufacturing company in emerging economics like Ghana.

Even though many studies on working capital have been undertaken not much has been done in the on companies listed on emerging markets like Ghana. The question is does working capital management has effects on profitability of listed manufacturing companies in Ghana. This research therefore seeks answer such question.

### **1.2 Objectives of the study**

The broad objective of the study is to examine effects of working capital management on the profitability of a manufacturing company in Ghana.

The specific objectives of the study are:

- To examine the impact of various components of working capital management on profitability of listed manufacturing companies in Ghana
- To establish the relationship between liquidity and profitability of listed manufacturing companies in Ghana.

### **1.3 Hypothesis**

- Ho: Working capital management has no significant influence on the net operating profit .
- Hi: Working capital management has significant influence on the net operating profit

## **2. 0 LITERATURE REVIEW**

### **2.1 Working capital management**

Working capital management involves the financing and management of the current assets of the firm and they change in nature thus, possible hourly, as a result managerial decisions must be made with respect to how much inventory is to be carried and how to get the funds to pay for it. (Block and Hirt 2000). Unlike long-term decisions, there can be no deferral of actions. While long term decisions involving plant and equipment's or market strategy, may well determine the eventual success of the firm, short term decisions on working capital on the other hand will determine whether the firm gets to the long term.

Working Capital Management is the administration of the firm's current asset and the financing needed to support current asset. (Horne and Wachowicz, 1998). They further said that for a sound working capital management, a firm needs to make two fundamental decisions. They are the determination of the optimal level of investment in current assets and the appropriate mix of short-term financing used to support this investment in current assets.

Efficient working capital management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. ( Eljelly, 2004).

Efficient management of working capital, and more recently good credit management practice as being pivotal to the health and performance of the small firm sector.( Peel and Wilson ,1996)

## **2.2 Management of working capital components**

### **Inventory Management**

Inventory management is described as “the planning, coordinating and controlling activities related to the flow of inventory through and out of an organization, (Horngren, Datar and Foster.2013)”; Inventory may be classified as Supplies, Raw materials, Work in progress and finished goods.” Brigham and Houston (2002),. These classes of inventory are essential part of virtually all business operations, as with the case of account receivables, inventory levels depends heavily on sales, whereas receivables build up after sales have been made, inventory must be acquired ahead of sales. The necessity of forecasting sales before establishing target inventory levels makes inventory management a difficult task. Also, since error in the establishment of inventory levels quickly leads to low sales or excessive carrying cost, inventory management is as important as it is difficult.

They further said that, Proper inventory management requires close coordination among the sales, purchasing, production and the finance departments as a result the finance manager must arrange any financing needed to support the inventory build-up, because lack of coordination among the departments may lead to poor sales forecast, hence leading to disaster.

Moreover, Brigham and Houston (2002) gave the following as the twin goals of inventory management: “To ensure that inventory needed to sustain operations are available and to hold the cost of ordering, and carrying inventory to the lowest possible levels, they also stated that inventory is costly to store, therefore there is always pressure to reduce it as part of the firms cost –containment strategies.”

There are cost associated with holding too little inventory because holding little inventory increases ordering cost and the firm can miss out on profitable sales hence suffer a loss of goodwill that can lead to lower future sales. So it is important to have enough inventories on hand to meet customer demands, this then reduces the cost of goods sold and increases their net profit margin. Inventory policy has been seen as a key component of working capital.

### **Account receivables**

Account receivables “makes up a very large portion of the firm’s assets; they actually composed of 25.97 percent of a typical firm asset. (Martin, Petty, Keown and Scott, 1991). Because of their magnitude any changes in their levels will affect profitability.” An increase in account receivables that is additional extension of trade credits- not only result in higher sales , also requires additional financing to support the increased investment in account receivables . The cost of credit investigation and collection efforts and the chances of bad debts are increased.

The authors further explained that all firms by their nature are either selling goods or providing services. These sales could also either take the form of cash sales or to a large extend credit sales. Whenever a credit sale is made, it increases the firms account receivables, therefore the credit account receivable management depends upon the degree to which the firm sells on credits. Cash flow from sales cannot be invested until the account is collected, control of account receivables takes on additional importance and efficient collection determines both profitability and liquidity of the firm.

With respect to the size of investment in account receivables, the financial manager does not play any role but other factors that come to determine it level. Firstly, the percentage of credit sales to total sales affects the level of account receivables held and in essence the nature of the business tends to determine the blend between credit sales and cash sales. For a large grocery store, sales tend to be exclusively on cash basis, while for most construction – lumber supply firms, sales are primarily on credits.

The level of sales also determines the size of investment in account receivables that is, the more sales, the greater the account receivables. As the firm experience seasonal and permanent growth in sales, the level of account receivables will naturally increase.

The final one is the credit and collection policies, more specifically; it is the terms of sales, the quality of customers and collection efforts.

The terms of sales specifies the time period during which the customer must pay for the sale and the terms; that is, the discount for paying early, and if so, how much?

The type of customer and credit policy also affects the level of investment in account receivables. For receivables, managing our decision is not to minimize losses, but to maximize profits.

### **Cash**

Cash management is described as minimizing the firm's risk of insolvency. They further argued that firms are unable to meet their maturing liabilities on time and that the reason for these firms lacking the necessary liquidity to make prompt payment on its current obligation is due to large cash caring. Cash can make production halt should payment for raw materials purchased be continually late or omitted entirely resulting to low production leading to low profit margin. Sound working capital is designed to minimize the time between cash expenditure on material and collection of cash sales.

There are various ways of managing cash are as follows:

"Cash Convention Cycle Model being focusing on the length of time between where the company makes payment and when it receives cash inflows, it also equals the length of time between the firm's actual cash expenditure and its own cash receipts, Receivables Collection Period is the average length of time required to convert the firm's credit sales per day and Payable Deferral Period is also the average length of time between the purchase of material and labour and the payment for cash for them."

### **Account payables**

Firms generally make purchases from other firms on credits, recording the debts as account payables. (Block, Hirk and Short,2000), It is the largest single category of short term debt because small firms do not qualify from financing from other sources, they rely heavily especially on trade credits as a result firms that do sell on credit have a credit policy that includes terms of credits.

Account payables can further be looked into as trade account payables and other accounts payables. Trade accounts payables are short term obligations to suppliers for purchases of merchandise and other accounts payable includes liabilities for any goods and services other than merchandise

### **2.3 Theoretical linkages between working capital management and the profitability of a firm**

The management of Working capital is important to the financial health of business of all sizes. Working capital meets the short term financial requirements of a business enterprise. It is a trading capital not retained in the business in a particular form for longer than a year. The money invested in it changes form and substance during the normal course of business operations. The need for maintaining an adequate Working capital can hardly be questioned. Just as the circulation of blood is very important in the human body to maintain life, the flow of funds is very necessary to maintain business. If it becomes weak, the business can hardly prosper and survive. Working capital starvation is generally credited as the major cause if not a major cause of small business failure in many developed and developing countries (Rafuse, 1996). The success of a firm depends ultimately, on its ability to generate cash receipts in excess of disbursement.

Given these peculiarities efficient management of working capital and more recently good credit management practice is pivotal to the health and performance of the small firm sector., (Peel and Wilson, 1996). The study conducted revealed that 60% enterprises suffer from cash flow problems. From such study there is the need for many industries to improve their return on capital employed (ROCE) by focusing on some critical areas such as cost containment, reducing investment in working capital and improving working capital efficiency.

Based on the information from the above findings, there is a negative relationship between profitability and the cash conversion cycle, inventory receivable days, accounts payable days and accounts receivable days which was used as a measure of working capital management efficacy. Therefore it seems that operational profitability dictates how managers or owners will act in terms of managing the working capital of the firm.

The negative relationship between accounts receivables and firms' profitability suggests that less profitable firms will pursue a decrease of their accounts receivables in an attempt to reduce their cash gap in the cash conversion cycle. Likewise the negative relationship between number of days in inventory and corporate profitability suggests that in the case of a sudden drop in sales accompanied with a mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations. Therefore managers can create profits for their companies by handling correctly the cash conversion cycle and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

## 2. 5 Empirical literature review

### 2.5.1 Working capital management and firm performance

The techniques mostly used to measure Working capital are targeted at assessing the productivity of the firm's investment in Working capital Components. Cash, account receivables, account payables and inventories are compared with output of the firm and this is usually in the form of sales, gross profits and operating income to discover the relationship between efficient working capital management and firms' profitability net trade cycle (NTC) as a measure of working capital management was adopted. (Shin and Soenen ,1998) Net trade cycle is basically equal to cash conversion cycle where by all three components are expressed as a percentage of sales. The reason by using net trade cycle was because it was an easy device to estimate for additional financial needs with regards to working capital expressed as a function of projected sales growth. This relationship is examined using correlation and regression analysis by industry and working capital intensity, using a compustat sample of 58,985 firm years covering the period of 1975 to 1994, in all cases they found a negative relationship between the length of the firms net trade cycle and its profitability. In addition, shorter net trade cycles are associated with higher risk- adjusted stock return. Therefore it has been analyze and there was a statistically negative relationship between cash conversion cycle and profitability has been confirmed.

In a similar study a sample of 1009 large Belgium non- financial firms for the period of 1992 to 1996 was used.( Deloof,2003). They used trade credit and inventory policies are measured by number of days account receivable, account payable and inventories and the cash conversion cycle as a comprehension measure of working capital management. He observed a positive relationship between cash conversion cycle and profitability by dividing the cash conversion cycle into its components. (Inventory days, accounts receivable days and accounts payable days) The results of the study concluded that, increases in all of these days affect profitability negatively.

In (2008), Samiloglu and Demirgunes, also used a sample consisting of Istanbul Stock Exchange listed manufacturing firms for the period of 1998 to 2007 under a similar regression model. It was found that accounts receivable period, inventory days, and leverage affects firm's profitability negatively, while growth (in sales) affects firm's profitability. They also went further to state that the firm's profitability can be increased by shortening accounts receivable and inventory periods. The negatively relationship between accounts receivable period and profitability may be due to that customers want more time to access quality of products they buy from firms with declining profitability.

Zariyawati, Annuar and Abdul - Rahin (2007), also discussed the relationship between cash conversion cycle and profitability by using a sample 1628 firm – year for the period of 1996 to 2006 they consists of six different economic sectors which are listed in Bursa Malaysia. The co- efficient results of pooled OLS regression analyses provide a strong negative significant relationship between cash conversion cycle and firms profitability. This reveals that reducing cash conversion cycle results to profitability increases. Thus, in purpose to create shareholder value, firms manager should concern on shorten of cash conversion cycle till accomplished optimal level.

Nevertheless Lyroudi and Lazaridis (2000), used the food industry in Greece to examine the cash conversion cycle as liquidity indicator of the firms and try to determine its relationship with the current and quick ratio, with its components variables and investigate its implications of the cash conversion cycle in terms of profitability, indebtedness and firms size.

Findings about working capital practices in retailing firms, has been concluded that there is reverse relationship between cash conversion cycle and profitability.( Kamath ,1998)

Eljelly (2004), in his findings, it has been concluded that the effect of cash conversion cycle on profitability is stronger than the effect of current ratio on it. Managing cash flow and cash conversion cycle is a critical component of overall financial management for all firms, especially those who are capital constrained and more reliant on short term sources of finance.( Walker and Petty, 1978 )

### 3.0 RESEARCH METHODOLOGY

#### 3.1 Research design and data set

The researcher used a correlative design to investigate the effect of working capital management on the performance of manufacturing firms using a panel data. Financial report on all the manufacturing companies listed on the Ghana stock exchange was used in this work. The research was to find out the effects of working capital management on the profitability of the manufacturing companies in the Accra metropolis listed on the Ghana Stock Exchange (GSE).

The sources of data for the study were taken from the annual financial statements of the manufacturing companies listed on the Ghana Stock Exchange (GSE) from the period 2007 to 2011. It is from these financial statements that variables such as net operation profit (NOP), Account payables days (AP days), Cash Conversion Cycle (CCC) and Inventory receivable days (INV days) and Liquidity information were generated. The financial statements of the manufacturing companies were obtained from the selected companies to assist the researcher in the research process.

#### 3.2 Model Specification

Since the study seeks to establish the relationship between working capital management components and profitability of many manufacturing listed companies in Ghana over a five year period, the study uses panel data regression analysis of cross-sectional and time series data. The cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects. This is consistent with (Raheman & Nasr, 2007)

The general model for the study is:

$$NOP_{it} = \beta_0 + \sum \beta_i X_{it} + \epsilon_{it} \quad (\text{Eq. 1})$$

$NOP_{it}$ : Net operating profit of firm i at time t

$\beta_0$ : The intercept of equation

$\beta_i$ : Coefficients of  $X_{it}$  variables

$X_{it}$ : The different independent variables for working capital management of firm i at time t

i: Manufacturing firms= 1,2,3,4 firms

t: Time= 1,2,3,4,5 years

$\epsilon$ : The error term

Actually, when the researcher convert the above general least squares model into specified variables it becomes:

$$NOP_{it} = \beta_0 + \beta_1 \text{Apdays}_{it} + \beta_2 \text{Invndays}_{it} + \beta_3 \text{CCC}_{it} + \epsilon_{it} \quad (\text{Eq. 2})$$

Where:

InTA: Total Assets

Apdays: Accounts payable days

Invndays: Inventory days

CCC: Cash Conversion Cycle

$\beta_0, \beta_1, \beta_2, \beta_3$ : They are parameters

The researcher used log-linear model to establish the relationship between the dependent and independent variables because of the following reasons:

Firstly, to find the percentage change in the dependent variable resulting from percentage changes in the independent variable. Thus, the study sought to find the responsiveness of a change in net operating profit to changes in account payable days, inventory days and cash conversion cycle (that is, elasticity's of the variables), hence the need to use the log-linear model.

Secondly, while the values for some of the variables such as account payable days, inventory days, cash conversion cycle were small others such as net operating profit was very large (in millions). There was therefore, the need to use the log form to bring the values for all the variables to the same unit or level.

#### 3.3 Definition and Measurement of Variables in the Model

In other to analyse the effects of working capital management on the firm's profitability, the researcher used the net operating profit as the dependent variable.

With regards to the independent variables, the researcher measured working capital management by using inventory receivable days (INV days), account payable days (AP days) and cash conversion cycle (CCC) as a comprehensive measure of working capital.

Inventory days (Invdays) were used as proxy for the inventory policy. This variable reflects the average number of day’s stock held by the firms. . It is calculated by dividing inventory by cost of sale and multiplying with 365 days. Longer storage times represent a greater investment in inventory for particular levels of operations.

Account payable days (Apdays) were used as proxy for the Payment Policy. It reflects the average time it takes the firms to make payment to their suppliers. It is calculated by dividing account payable by purchases and multiplying the result by 365. The higher the value the longer firms take to settle their payment commitment to their supplies.

The cash conversion cycle (CCC), were also used as a comprehensive measure of working capital management. It is measured by adding inventory receivable days with account receivable days deducting account payable days. The longer the cash conversion cycle, the greater the net investment in current asset and hence the greater the need to sought for funds to finance the current assets.

**4. 1 RESULT AND DISCUSSION**

The regression model for the study was stated as:

$$\ln TA_{it} = \beta_0 + \beta_1 Apdays_{it} + \beta_2 Invdays_{it} + \beta_3 CCC_{it} + \epsilon_{it} \quad (Eq.4.0)$$

**Table 4.1: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.794 <sup>a</sup>	.631	-.476	1.014259812

a. Predictors: (Constant), CCC, AP Days, IVN Days

The model 1 produces an R value of 0.794, indicating that, the regression model between the dependent variable and the set of independent variables is appropriate. The R square figure of 0.631 indicates that, reliance on this model will account for 63.1% of the variations in the dependent variable total (assets).

**Table 4.2: Analysis of Variance (ANOVA)**

ANOVA<sup>b</sup>

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.760	3	.587	.570	.723 <sup>a</sup>
	Residual	1.029	1	1.029		
	Total	2.789	4			

a. Predictors: (Constant), CCC, AP Days, IVN Days

b. Dependent Variable: TA

$$F_{0.05V1V2} = 0.570$$

From the table 4.2 the regression source of variation of 1.760 is higher than the residual source of variation of 1.029. Thus, the regression model is able to explain larger portion of the variations in the dependent variables (net operation profit) than the residual source of variation.

From the table 4.2 the F-value is 0.570, whilst the selected F-critical value is 5.79. This clearly confirms that the overall regression model is not statistically significant.

**Table 4.3: Summary Statistics Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	24.891	78.015		.319	.803
	AP Days	-1.453	11.642	-.126	-.125	.921
	IVN Days	-1.388	14.340	-.105	-.097	.939
	CCC	1.496	2.729	.774	.548	.681

a. Dependent Variable: TA

$$\ln TA = 24.891 - 1.493 \ln AP_{days} - 1.388 \ln IVN_{days} + 1.496 \ln CCC$$

$$T = \quad \quad (-0.126) \quad \quad (-0.105) \quad \quad (0.774)$$

$$SE = (78.015) (11.642) \quad \quad (14.340) \quad \quad (2.729)$$

$$R^2 = 0.631$$

$$RSS = 1.029$$

$$ESS = 1.76$$

$$F = 0.570$$

**4.2 Analysis of Regression Results**

This section elucidates the relationship between working capital management and profitability of listed manufacturing companies in the Accra Metropolis based on the results of table 3. The accounts payable days, inventory days and cash conversion cycle are the measures of working capital in the regression model.

From the regression result (model 1), there is negative relationship between accounts payable day and net operating profit. That is, from the table 4.3 when account payable increase by 1% total assets fall by -1.493.

Base on this it is apparent that the accounts payable (Ap days) with a coefficient of - 1.453, t-test of (-0.126) has no statistical significance on profitability. This also indicates that the shorter the account payable days, the more profitable the companies are. Although, this finding is in line with the conclusion of ( Lazaridis and Tryforidis , 2000).

Again, there is negative relationship between inventory days and dependent variables (net operating profit). This is due to the fact that from table 4.3, when inventory days increase by 1% net operating profit decrease by - 1.388. Therefore, the inventory days with a coefficient of -1.388 and t-test of (-0.105) has no statistical significance on profitability. This implies that, either longer or shorter, it takes the companies to sell their inventories, has no influence on profitability. This finding, however, is in support of earlier research by Narasimba and Murty (2001) and Deloof (2000) who found a negative relationship between inventory days and profitability. Furthermore, there is positive relationship between Cash Conversion Cycle and net operating profit This is because from the table 4.3, when cash conversion cycle increase by 1% total assets also increase by 1.496.

This means that, Cash Conversion Cycle with a coefficient 0.744, t-test of (0.774). This shows that even though it coefficient is positive; it has no statistical significance on profitability. This clearly implies that the period between the expenditure for the purchases of raw materials and the collection of sales from finished goods has an impact on the profitability of manufacturing companies. This finding contradicts and support similar research conducted by Lazaridis and Tryforidis (2000), Lyroudi and Lazandis (2000) and Zariyawati, Annuar and Abdul-Rahim (2007) who found a negative, positive and negative between cash conversion cycle and profitability respectively.



### 5.1 Conclusion

The study used three measures of working capital to test whether working capital management has a significant effect on profitability. The above findings indicated clearly that 'one of the measures (cash conversion cycle) in the research has positive but insignificant effect on profitability of the manufacturing firms in the Accra Metropolis and for that matter Ghana.

Notwithstanding two of the variables (account payable days and inventory days) in the study has negative coefficient but also has insignificant effect on profitability of manufacturing companies in the chosen area which are listed on the stock exchange.

The conclusion indicates that managers of manufacturing companies must employ efficient and effective working capital management practices to ensure the survival of the business.

Also the study observe that the negative relationship between accounts payable days and profitability may be due to that, lower gross operating profit is associated with an increase in the accounts payable days. This means the less profitable firms wait longer to pay their bills taking advantage of credit periods granted by their suppliers.

The study recommends that manufacturing companies should adopt efficient and effective working capital management policies to keeping working capital at optimal level. It looks like working capital management has not been effective and efficient for the manufacturing industry in Ghana.

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